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ABSTRACT

The emphasis in stress-illness research has begun to shift recently toward the study of resistance resources. Social support has been identified as a potentially important moderator of the stress-illness relationship. In this study, hardiness in a sample of police officers was examined. Subjects (N=60) were police officers from seven suburban police departments who completed a questionnaire which measured life stress, police stress, strain, illness, absence from work, and hardiness. Six months later all variables except hardiness were measured again. The results of hierarchical regression analyses indicated that hardy police officers had less concurrent strain, future strain, concurrent illness, and future illness. Police officers who had high police stress tended to have a high level of future illness and future absence from work. Further, the interaction between hardiness and police stress on future absence from work was significant. Thus, hardy police officers with a high level of police stress tended to have a higher level of absence from work than hardy officers with a low level of police stress, while nonhardy police officers experienced a high level of absence from work regardless of their job related stress. Future research should examine police officers' long-term health and their subjective and objective reactions to stress. (57 references) (Author/ABL)

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The Effects of Hardiness, Job-Related Stress, and Life Stress on Health and Absence From Work

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Running head: HARDINESS AND STRESS

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Abstract

One hundred sixty-seven police officers from seven suburban police departments were asked to complete a questionnaire which measured life stress, police stress, strain, illness, absence from work, and hardiness. Six months later, all variables except hardiness were measured again. Completed and usable data from 60 police offifers were obtained. The results of hierarchical regression analyses showed that hardy police officers have less concurrent strain, future strain, concurrent illness, and future illness. Police officers who have high police stress tend to have a high level of future illness and future absence from work. Police officers who have a high level of life stress also tend to have a high level of concurrent illness and future illness. Further, the interaction effect between hardiness and police stress on future absence from work was significant. Thus, hardy police officers with a high level of police stress tend to have a high level of absence from work than hardy officers with a low level of police stress, whereas nonhardy police officers experience a high level of absence from work regardless of their job-related stress. It appears that hardy police officers with a low level of police stress are still trying to postpone their reactions towards stress in the form of absence from work as long as possible.

The Effects of Hardiness, Job-Related Stress, and Life Stress on Health and Absence From Work

For the past two decades, interest in stress has become universal. The experience of stress is not new. However, the term "stress" has been used widely with varying meanings (McGrath, 1976; Selye, 1956). Researchers and practioners have focused on occupational stress (e.g., Beehr & Newman, 1978; Caplan; Cobb, French, Harrison, & Pinneau, 1975; Ivancevich & Matteson, 1980; Matteson & Ivancevich, 1987; Motowidlo, Packard, & Manning, 1986) as well as life stress (e.g., Bhagat, McQuaid, Lindholm, & Segovis, 1985; Dohrenwend & Dohrenwend, 1974; Holmes & Rahe, 1967; Sarason, Johnson, & Siegel, 1978) as related to health and behavior in organization (McGrath, 1976).

A major portion of stress-illness research has been devoted to the role that stressful life events play in precipitating the onset of physical and psychological disturbances. The correlation between stress and both illness and psychological disturbance has been statistically significant but relatively small in magnitude (Dohrenwend & Dohrenwend, 1974; Rabkin & Struening, 1976). Several theories of person-environment (P-E) fit as applied to the areas of stress (e.g., Caplan, 1987; French, Rodgers, & Cobb, 1974), work design (e.g., Kulik, Oldham, & Hackman, 1987), and congruence (e.g., Muchinsky & Monahan, 1987) have been proposed in order to better understand the behaviors in organizations.

The emphasis on stress-illness research has begun to shift recently toward the study of "resistance recources" (Antonovsky, 1979). Social support has been identified as a potentially important moderator of stress-illness relationship (e.g., Lefcourt, Martin, & Saleh, 1984; Kobasa, Maddi, Puccetti,

& Zola, 1985; Kobasa & Puccetti, 1983). Further, personality variables such as locus of control (e.g., Johnson & Sarason, 1978; Lefcourt et al., 1984), social interest (e.g., Crandall, 1984), work ethic (e.g., Flannery, 1984), and hardiness (e.g., Kobasa, 1979; Kobasa, Maddi, & Courington, 1981; Kobasa, Maddi, Kahn, 1982; Kobasa, Maddi, Puccetti, & Zola, 1985; Kobasa & Puccetti, 1983; McCranie, Lambert, & Lambert, 1987) have also received a great deal of attention in the literature. The focus, thus, is on the importance of various individual resistance resources. Recently, hardiness has received considerable attention.

Hardiness and Life Stress

Kobasa (1979) proposed hardiness as a constellation of personality characteristics that encourage transformational coping and, therefore, function as a resistance resource in the encounter with stressful life events. The three crucial dimensions for hardiness are commitment, control, and challenge. Commitment, control, and challenge should not be regarded as being mutually exclusive, rather, they should be understood as deeply intertwined components that resemble each other to a large degree (Kobasa, 1979).

Recently, several theoretical and empirical criticisms concerning hardiness theory and research have appeared in the literature (e.g., Funk & Houston, 1987; Hull, Van Treuren, & Virnelli, 1987). Most of the concerns are related to the measurement of hardiness, hardiness as a negative indicator of the characteristics, hardiness as a multidimensional construct, and its lack of consistent evidence as a stress-buffer (cf. Rhodewalt & Zone, 1989). However, despite these limitations, research consistently reports reliable differences between hardy and nonhardy individuals (e.g., Ganellen & Blaney, 1984; Rhodewalt & Zone, 1989; Schmied & Lawler, 1986).

Kobasa (1979) found that the high-stress/low-illness executives showed significantly greater personality hardiness than the high-stress/high-illness executives. Further, various demographic characteristics, such as age and job level, failed to distinguish between the two groups. Kobasa, Maddi, and Kahn (1982) also found that executives' hardiness and stressful life event scores proved to be powerful predictors of changes in executives' illness over time in that hardiness decreased the likelihood of symptoms onset, supporting the role of commitment, control, and challenge as resistance resources. Further, a significant interaction between life stress and hardiness indicated that hardiness had its greatest health preserving effect when stressful life events mounted.

In a longitudinal study, Kobasa, Maddi, and Courington (1981) also identified a significant main effect for hardiness but failed to find a significant interaction between life stress and hardiness. Kobasa (1982) extended the use of hardiness to a group of lawyers but failed to replicate the stress and illness association reported repeatedly in the research literature. This led Kobasa (1982) to conclude that cause and effect in the stress and illness relationship need to be altered to take into account not only personality differences, but the impact of social variables like professional membership as well. In the present study, hardiness in a sample of police officers was examined.

Police Stress

When considering stress resistance research, police officers emerge as an interesting group for study. There has been a growing volume of literature in recent years concerned with job stress in police work (Webb & Smith, 1980). Police work is a well-known high-stress occupation (Band & Manuele, 1987;

Dantzer, 1987; Saxe & Fabricatore, 1982). The stress associated with police work is quite unique and relatively violent in comparison to the stresses encountered in the general population (Band & Manuele, 1989).

An extensive list of stressors associated with police work has been identified. Symonds (1970) divided the sources of police stress into two broad categories: (1) the nature of police work, and (2) the nature of police organizations.

The first category of stressors includes constant exposure to danger, facing the unknown, confronting hostility, and making judgments in rapidly changing, unpredictable situations. The second category includes quasi-military structure of police organizations, competition for promotional opportunities, diagreeable job assignments, and varying tours of duty. Other sources of stress also include the courts, administration, equipment, community relations, shift changes, relations with supervisors, isolation, boredom (Kores, Margolis, & Hurrell, 1974), constitutional limitations, sentencing practices (Campbell, Sahid, & Stang, 1976), role conflict and role ambiguity (Hillgren & Bond, 1975; Potts, 1982), resentment, hostility, and aggression from a segment of the population (Reiser, 1970), authoritarian management practices, rating and promotional issues, the stress created by the internal discipline structure, and peer group pressures (Reiser, 1974).

An additional area of interest when considering police officers is the effect of job-specific stress. Therefore, the Police Stress Survey (Spielberger, Grier, Salerno, & Pate, 1979) was used to measure the amount of job stress that officers might face. It was felt that the use of a job stress instrument would lead to a more accurate picture of the stress the police officers might face as a part of their continuing routine.

Professional Norm

Kobasa (1982) suggested that "professional norm of health under stress" should be examined as a mitigator of the illness-provoking effects of stress. Kobasa (1979, 1982) suggested that lawyers did not become physically ill under stress, whereas the business executives did. The two groups' contrasting views of stress were examined.

Kobasa (1982) argued that lawyers tend to believe that they perform best under pressure. Their training conditions them to produce, confront, and deal with stress. Lawyers are judged to "remain clear-headed, in control, shrewed, and calm throughout it all" (p. 707). Lawyers are reputed to lead very long, productive lives despite all the stress they are exposed to. Thus, it is expected that lawyers thrive under stress. Further, Kobasa (1982) also suggested that "lawyers are allowed to say they have sleepless nights or heart-burn--but to say one has an ulcer to hypertension may be to violate the expectations about how lawyers react to stress. Its report is therefore postponed as long as possible" (p. 715). Thus, there is a greater time lag between stressful life-event occurrence and illness onset.

On the other hand, business executives are told that stress is harmful and can kill them. Business executives who suffered a heart attack before the age of 50 is described as the classical stress victim. Most business corporations have this negative, narrow view of stress. Thus, the executive's social group provides little support for a view of stress as positive or controllable. In a study of army officers, Kobasa found that army officers fell ill, mentally or physically, far more frequently than the business executives (Pines, 1980). Army officers scored lower on commitment than either the business executives or the lawyers. It is speculated that this may

be caused by the fact that army is a total institution, from which there is little escape.

Parkes and Rendall (1988) argued that "the question of whether the concept of hardiness as a stress-resistance resource applies equally to other national groups, and to other population groups, remains unclear" (p. 789). In the present study, hardiness in a sample of police officers was examined.

It is reasonable to believe that police officers are also trained to perform under pressure and deal with stress on the job. Therefore, police officers are also similar to lawyers in terms of their reactions toward stress. Following this line of reasoning, police officers are expected to thrive under stress. Further, police officers also function in organizations with a quasi-military structure. Thus, they are, in a sense, similar to army officers. One may speculate that police officers may also suffer a high level of illness due to stress. Based on these arguments, it is expected that the reaction pattern of police officers may fall between lawyers and army officers.

A factor that may affect the relationship between stress and illness is the officers' willingness to admit to actual illness. Mechanic (1974) has completed extensive work depicting a wide variety of social psychological variables and found that group norms and ideology may influence the degree to which people will admit to actual illness. It is plausible that police officers may postpone the recognition of symptoms as physical illness for as long as possible. Therefore, in addition to a comprehensive illness measure as suggested in the hardiness literature, additional variables that assessed strain and absence from work were also examined in the present study.

Strain and Illness

The immediate stress symptoms are labeled as strain (e.g., Horowitz & Kaltreider, 1980). Illness refers to the comprehensive illness measure containing symptoms that the medical profession recognizes as disease syndromes. These syndromes are typically described as consequences of stressful life events that take from two months to two years to emerge (e.g., Rahe, 1974).

In the present study, the role of strain in the stress-illness relationship was examined in a two-fold manner. First, the effects of hardiness and stress on strain was examined. Second, because many stress researchers regard strain as a precursor to psychosomatic (e.g., Horowitz, 1976) and physical diagnoses, thus, the strain and illness relationship was examined (e.g., Rahe, 1974). Rahe (1974) also includes psychological links between strain symptoms and diagnosed illness in his strain-illness model. For this reason, hardiness was also investigated as a possible buffer between strain and illness.

Based on the review of the literature the following hypotheses were proposed:

Hypothesis 1. Hardiness will operate as a resistance resource in the stress (police stress and life stress) and strain relationship.

Hypothesis 2. Hardiness will operate as a resistance resource in the stress (police and life stress) and illness relationship.

Finally, the relationship between strain and illness was examined as an exploratory topic. Hardiness as a resistance resource in the relationship between stress and absence from work was also proposed as an exploratory topic.

Method

Subjects

The subject pool for this study was 167 police officers drawn from seven suburban police departments of middle Tennessee. At Time 1, a composite questionnaire was distributed to the subjects. The questionnaire was completed and returned by 68% of the subjects. After deletion for incomplete protocols, 100 subjects remained. Time 2 was separated from Time 1 by six months. At Time 2, a similar composite questionnaire was distributed to the 100 police officers. The return rate for Time 2 was 60% yielding a final sample of 60 subjects.

Out of these 60 police officers, only two were female. Due to the small sample of female subjects, males and females were combined in the data analysis. The average age of these subjects was 32.37. Their formal education was about 13.24 years. In terms of their marital status, the number of police officers who were single, married, divorced, separated, and widowed were 9, 45, 5, 1, and 0, respectively.

Measurements

At Time 1, stressful life events, police job stress, strain, illness, and absence from work all pertaining to the previous six months as well as personality hardiness were measured. At Time 2, measures, with the exception of hardiness, used at Time 1 all pertaining to the previous six months were all included in the second questionnaire. Thus, police stress measures obtained at Time 1 and Time 2 were labeled as Stress-1 and Stress-2, respectively. All the measurements were discussed as follows:

Stressful Life Events. Stressful life events was measured by the widely-used Schedule of Recent Events (Holmes & Rahe, 1976). This scale

lists numerous events and provides a stressfulness weight for each that has been determined through the consensus of objective judges. This measure has consistently shown a low positive correlation with measures of illness.

Police Stress. This stress of specific job events was assessed by the Police Stress Survey (Spielberger et al., 1979). Respondents were asked to rate 62 job events from 0-100 in comparison to a standard assignment of disagreeable duties which are arbitrarily assigned a rating of 50. A job stress index for each employee was determined by multiplying the average rating for the top 20 job events (figured on all individuals returning the questionnaire at Time 1) by the frequency with which the event was experienced.

Illness. The Seriousness of Illness Rating Scale (Wyler, Masuda, & Holmes, 1968) was given to evaluate the degree of diagnosable physical illness experienced by the police officer within the two six-month intervals. The Seriousness of Illness Scale has been used extensively in research that has demonstrated a link between the occurrence of stressful life events and the onset of illness (Dohrenwend & Dohrenwend, 1974; Kobasa, 1979, 1982; Kobasa et al., 1981, 1982, 1983). The instrument requires the subject to indicate a list of commonly-recognized disease syndromes which they have encountered. The scale contains not only a wide range of illnesses, but also seriousness weights.

Strain. The strain measure consists of a simple listing of physical and mental symptoms commonly associated with stress response (Horowitz, 1976). Subjects indicated the degree to which they were bothered by each of the 16 symptoms during the two six-month intervals (0 for not al all, 1 for a little, 2 for quite a bit, and 3 for extremely). A strain score for each police

officer was obtained by adding all 16 ratings. This measure was found by Kobasa (1982) to have good internal consistency and high test-retest reliability over a two-week period at .80.

Hardiness. Hardiness is a constellation of personality dimensions that has been found to be best measured by five scales (Kobasa, Maddi, & Kahn, 1982; Kobasa et al., 1981; Kobasa & Puccetti, 1983). This study used the same scales: (a) the alienation from self, (b) alienation from work, and (c) powerlessness scales from the Alienation Test (Maddi, Kobasa, & Hoover, 1979), (d) the security scale of the California Life Goals Evaluation Schedule (Hahn, 1966), and (e) the External versus Internal Locus of Control Scale (Rotter, Seeman, & Liverant, 1962). Low scores on each scale provide an indication of hardiness.

A composite based on these five scales has shown a stability correlation of .61 over a five-year period (Kobasa, 1982). Following the precedents cited, police officers' scores on the five scales were standardized and added to obtain a measure of hardiness. Thus, the lower the hardiness score, the higher the individual is characterized by commitment, control, and challenge.

Results

The means, standard deviations, and intercorrelations of the variables in this study are presented in Table 1. The mean life stress score for the 60 officers was 138 (covering a six-month period), with a standard deviation of 108. A life crisis has been defined as any clustering of life-change events whose sum equals 150 or more in one year (Rahe, Myer, Smith, Kjaer, & Holmes, 1964). The mean illness score for the first six months was 877 with a standard deviation of 640. The mean illness score for the second six months was 977 with a standard deviation of 1065. Comparison of these illness scores

with norms available in the literature (Holmes & Masuda, 1974; Wyler et al., 1968; Wyler, Masuda & Holmes, 1970) indicates that during each six-month period the average police officer experienced illness comparable to the threat of life and discomfort associated with having a peptic ulcer or high blood pressure.

Insert Table 1 about here

A low composite score of hardiness indicates a high level of hardiness. The results of Table 1 showed that hardiness was significantly correlated with concurrent strain (strain at Time 1) r (59) = .65, $p < .001$, and concurrent illness (illness at Time 1), r (59) = .48, $p < .001$. Hardiness was also significantly associated with future strain (strain at Time 2), r (59) = .41, $p < .01$, and future illness (illness at Time 2), r (59) = .33, $p < .01$. Further, hardiness was also related to future life stress (life stress at Time 2), r (59) = .25, $p < .05$. Thus, nonhardy police officers tended to have a high level of strain and illness at both Time 1 and Time 2 and to have a high level of life stress at Time 2.

Hierarchical multiple regressions were computed in 12 separate analyses so that each stress variable was run separately with hardiness on all six dependent variables. The hardiness variable in each analysis was entered first, stress (police stress or life stress) was entered second, the product of the two was entered third. The first two varibles in each equation produce the equivalent of main effects, whereas the third produces the equivalent of the interaction term in the analysis of variance (Cohen & Cohen, 1983). The

analysis thus revealed whether hardiness had a significant main effect and/or buffering effect with regard to the stress-strain, stress-illness, and stress-absence from work relationship. The results of these 12 hierarchical regression equations are presented in Table 2.

Insert Table 2 about here

Concurrent and Future Strain

Police Stress. The effects of police stress and hardiness on concurrent strain (Time 1) and future strain (Time 2) were examined. The results of Table 2 showed that the main effects of hardiness on concurrent strain and future strain were both significant, R^2 change = .427, F change (1, 58) = 43.19, p = .001; R^2 change = .167, F change (1, 58) = 11.66, p = .001; respectively. However, the main effect of stress on strain and the interaction between hardiness and police stress on strain failed to reach significance.

Life Stress. The effects of hardiness on concurrent strain and future strain were exactly the same as those mentioned in the previous paragraph. Therefore, the same significant results were not repeated here. Further, the effect of life stress on strain and the interaction effect between hardiness and life stress on strain were not significant.

Based on these results, it appears that police stress and life stress do not have significant impacts on concurrent strain and future strain. Hardiness, however, has significant impacts on strain, both at Time 1 and Time 2. Thus, hypothesis 1 was supported.

Concurrent and Future Illness

Police Stress. The effect of hardiness on concurrent illness was significant, R^2 change = .234, F change (1, 58) = 17.75, p = .001. The main effect of hardiness on future illness was also significant, R^2 change = .106, F change (1, 58) = 6.88, p = .011. The main effect of police stress on concurrent illness was not significant. However, the same effect (police stress) on future illness (Time 2) reached significance, R^2 change = .110, F change (2, 57) = 7.98, p = .007. Further, the interaction effects on illness failed to reveal significant results.

Life Stress. The effects of life stress on concurrent illness and future illness were both significant, R^2 change = .055, F change (1, 58) = 4.43, p = .040; R^2 change = .142, F change (1, 58) = 10.80, p = .002; respectively. The interaction effect again were not significant.

It appears that life stress has immediate impacts on concurrent illness (Time 1) and also on future illness (Time 2). Our present results show that job-related stress does not have significant impacts on immediate illness (Time 1). However, it does have significant influences on illness for the second six-month period (Time 2). Thus, police stress and life stress do not seem to have the same pattern of impacts on illness. Hypothesis 2 was supported in that hardiness had significant impacts on concurrent illness and future illness.

Concurrent and Future Absence

Police Stress. Table 2 revealed that hardiness had no impacts on absence from work at Time 1 and Time 2. Police stress had no impacts on concurrent absence but did have significant influence on future absence from work

(R^2 change = .096, F change (1, 58) = 6.16, p = .016). The interaction effect between hardiness and police stress was not significant for concurrent absence. However, the same interaction effect was significant for future absence (R^2 change = .091, F change (3, 56) = 6.41, p = .014).

The interaction between hardiness and police stress on absence from work at Time 2 was further examined using median split of these two variables. Hardy police officers with a high level of police stress had displayed a high rate of absence from work (M = 1.67), whereas hardy officers with a low level of police stress had showed a low rate of absence from work (M = .31). Nonhardy police officers showed a high level of absence from work regardless of their high or low level of police stress (M (absence from work) = 1.18 and M = 1.38 for high and low police stress, respectively). It appears that hardiness may function as a buffer to reduce police officers' absence from work only when the level of police stress is low.

Life Stress. The hierarchically arranged multiple regression analysis using hardiness and life stress on absence failed to reveal any significant results. Thus, absence from work was not affected by these variables.

Based on these analyses, our results show that hardiness may have served as a buffer with regard to the stress-future absence from work relationship. Hardiness also has a main effect on concurrent and future strain and concurrent and future illness.

Strain-Illness Relationship

An additional area of interest in this study concerned the role of strain as a possible precursor to illness, with hardiness as a possible buffer. A review of Table 1 shows that strain during the first six months was significantly correlated with illness measured during the same period, r (59)

= .60, $p < .001$. Strain for the first six months was also significantly corrrelated with future illness, r (59) = .33, $p < .01$. Interpreting the correlations between strain and illness is complicated by the fact that the correlation between illness for the first six months and future strain, r (59) = .52, $p < .001$, was significant.

The role of hardiness in the strain-illness relationship was investigated through two additional hierarachical regression analyses. Table 3 shows that when strain for the first six-month period and hardiness were run with concurrent illness, the main effect of hardiness was significant, F change (1, 58) = 17.75, $p = .0001$. The same main effect of hardiness on illness during Time 2 was also significant, F change (1, 58) = 6.88, $p = .011$. The main effects of strain on illness at Time 1 and Time 2 were both significant, F change (2, 57) = 13.08, $p = .0006$; and F change (2, 57) = 37.84, $p = .0001$; respectively. Finally, the interaction between hardiness and strain on illness at Time 1 reached marginal level of significance, F change (3, 56) = 3.98, $p = .0510$. However, for Time 2, the interaction effect was not significant.

The interaction effect between hardiness and strain on concurrent illness was further examined. It appeared that a high level of strain was associated with a high level of illness regardless of the individuals' hardiness level (i.e., for high hardiness, M (illness) = 1160.57; for low hardiness, M (illness) = 1307.68). Under the condition of low strain, police officers with high hardiness experienced less illness (M = 432.26) than did those with low hardiness (M = 726.75). Thus, hardiness may function as a buffer only when officers suffered a low level of strain. For officers already have a high level of strain, hardiness does not help them prevent illness. A caution

should be made in the interpretation of the present results due to the marginal level of significance of the interaction effect.

Insert Table 3 and 4 about here

Step-Wise Regression

A final set of analyses was executed to develop a more comprehensive model of current and future illness prediction. The analyses here concerned the role of the previously utilized independent variables within two stress-illness models. Life stress, police stress, hardiness, and strain (all pertaining to the first six months) were analyzed together as possible predictors of concurrent and future illness. Table 4 presents the results of the two subsequent stepwise regression equations. The entry of the variables into the equations was not predetermined. A review of Table 4 shows that strain, $\underline{R}^2$ = .36, $\underline{F}$ (1, 58) = 33.05, $\underline{p}$ = .001 and life stress, $\underline{R}^2$ change = .052, $\underline{F}$ (1, 57) = 5.07, $\underline{p}$ = .028 were the two variables selected by the stepwise procedure to predict concurrent illness. The variables that were selected by the stepwise procedure to predict future illness were life stress, $\underline{R}^2$ = .191, $\underline{F}$ (1, 58) = 13.69, $\underline{p}$ = .0005; police stress, $\underline{R}^2$ change = .065, $\underline{F}$ (1, 57) = 5.01, $\underline{p}$ = .029; and hardiness, $\underline{R}^2$ change = .053, $\underline{F}$ (1, 56) = 4.26, $\underline{p}$ = .044.

Discussion

The results of the present study show that hardy police officers have less concurrent strain, future strain, concurrent illness, and future illness. Police officers who suffer from job-related stress (i.e., police stress) tend

to have a high occurrence of future illness and future absence from work. Police officers who have a high level of life stress also tend to have a high level of concurrent illness and future illness.

The interaction effect between hardiness and police stress on future absence from work also reached significance. That is, hardy police officers with a high level of job-related stress tend to have a high level of absence from work than hardy officers with a low level of police stress, whereas nonhardy police officers experience a high level of absence regardless of their job-related stress.

The results of the present study reveal that hardy police officers are able to maintain a low level of strain and illness. However, hardy officers' absence from work is directly related to the amount of police stress that they have experienced. That is, a high level of police stress is related to a high level of absence, for hardy officers, in particular. Hardy officers with a low level of police stress are still trying to postpone their reactions towards stress as long as possible. If the level of police stress is high, then, hardy police officers are unable to postpone their reactions in the form of absence from work.

Kobasa (1979, 1982) stated that lawyers did not become physically ill under stress, while the business executives did. Lawyers perform best under pressure and are trained to remain clear-headed and in control (Kobasa, 1982). It may be argued that police officers are also trained to maintain their control and stay cool when they face their daily stresses on the job. Therefore, it is plausible that police officers do not want to admit that they are suffering from strain and possibly from illness, for hardy officers especially. The present results support the notion that police officers

postpone their reactions towards stress. Moreover, the professional norm of health under stress should be examined further in future research (cf. Kobasa, 1982). It should be pointed out that police officers' ability to postpone the reactions towards stress is, however, not unlimited.

It can be concluded that, based on the results of the present study, both police stress and life stress have significant impacts on future illness. Further, hardiness reduces both concurrent and future strain and illness. However, for absence from work, only hardy police officers with a low level of job-related stress are able to keep it at a low level. Thus, it appears that stress has a long-term impact on health. Hardiness will operate as a resistance resource in the stress and strain relationship and also the stress and illness relationship. Finally, hardiness may function as a buffer to reduce police officers' absence from work.

In the present study, only 60 police officers were examined during a six-month period. The long-term effect of life stress and police stress on strain, illness, and absence from work was not examined. Thus, future research should examine police officers' long-term health and other related issues and also their subjective and objective measures of their reactions of stress.

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Table 1

Means, Standard Deviations, and Correlations Among Variables

Variable	M	SD	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Age	32.37	8.40	68***	05	41***	00	-08	-09	-12	-23*	-14	-23*	-16	-20	-06	-11	-16	-22	-22*	-26*	06
2. Tenure	7.63	5.37		12	36**	-08	06	-01	04	-07	-02	-17	-15	-15	07	-07	05	-15	-11	-03	08
3. Education	13.24	2.17			05	-26*	-13	-19	-14	-03	-20	-13	-03	-26*	-25*	-05	-02	-11	-22*	-19	05
4. Marital Status (Married=1, Others=0)						-01	02	-07	-10	02	-04	-35**	-01	00	16	-13	00	13	-01	-14	-16
5. Alienation-Work	3.38	3.31					68***	75***	16	37**	80***	05	18	62***	36**	00	11	26*	38***	24*	-10
6. Alienation-Self	2.00	2.30						68***	23*	46***	83***	08	12	48***	33**	00	25*	19	25*	23*	14
7. Powerlessness	8.95	5.69							33**	43***	87***	04	26*	60***	50***	05	-02	33**	36**	31**	-04
8. Security	18.63	8.05								20	52***	01	-01	21	17	16	-16	-08	16	04	17
9. I-E Scale	8.37	4.05									67***	17	22*	49***	43***	45***	23	24*	35**	38***	34**
10. Hardiness	.00	3.68										09	21	65***	48***	18	11	25*	41***	33**	14
11. Stress-1	3971.82	5033.03											26*	22*	12	29	44***	04	14	36**	34**
12. Life-1	138.35	108.07												18	33**	07	23	66***	26*	44***	07
13. Strain-1	6.93	5.33													60***	29*	11	19	62***	33**	12
14. Illness-1	877.48	640.11														24*	18	18	52***	50***	12
15. Absence-1	1.17	1.91															15	16	01	07	35**
16. Stress-2	5685.92	4775.12																03	16	26*	00
17. Life-2	139.86	120.46																	33**	50***	-03
18. Strain-2	7.35	5.96																		68***	08
19. Illness-2	977.22	1064.85																			08
20. Absence-2	1.09	1.44																			

Note. N = 60. For Stress-2 and Life-2, n = 49. All decimals have been omitted for correlations. *p < .05, **p < .01, ***p < .001.

Table 2

Hierarchically Arranged Multiple Regression Analyses

Independent Variable	R^2 Change	F Change[a]	p	R^2 Change	F Change	p
	Concurrent Strain (Time 1)			Future Strain (Time 2)		
Hardiness (A)	.427	43.19	.000	.167	11.66	.001
Police Stress (B)	.026	2.70	.106	.011	.75	.388
A x B	.002	.18	.670	.001	.04	.841
Hardiness (A)	.427	43.19	.000	.167	11.66	.001
Life Stress (B)	.002	.17	.684	.033	2.35	.131
A x B	.000	.05	.829	.000	.01	.915
	Concurrent Illness			Future Illness		
Hardiness (A)	.234	17.75	.000	.106	6.88	.011
Police Stress (B)	.006	.42	.518	.110	7.98	.007
A x B	.007	.54	.466	.004	.30	.585
Hardiness (A)	.234	17.75	.000	.106	6.88	.011
Life Stress (B)	.055	4.43	.040	.142	10.80	.002
A x B	.000	.03	.857	.000	.04	.849
	Concurrent Absence			Future Absence		
Hardiness (A)	.033	1.97	.165	.018	1.06	.306
Police Stress (B)	.030	1.83	.182	.096	6.16	.016
A x B	.001	.09	.767	.091	6.41	.014
Hardiness (A)	.033	1.97	.165	.018	1.06	.306
Life Stress (B)	.001	.08	.784	.001	.08	.772
A x B	.008	.48	.490	.002	.09	.760

Note. [a] $df_A = 1, 58$; $df_B = 2, 57$; $df_{A \times B} = 3, 56$.

Table 3

Hierarchically Arranged Multiple Regression Analyses on Strain-Illness Relationship

Independent Variable	R^2 Change	*F* Change[a]	*p*	R^2 Change	*F* Change	*p*
	Concurrent Illness (Time 1)			Future Illness (Time 2)		
Hardiness (A)	.23	17.75	.0001	.10	6.88	.011
Strain (B)	.14	13.08	.0006	.36	37.84	.0000
A x B	.04	3.98	.0510	.00	.31	.5763

Note. [a] df_A = 1, 58; df_B = 2, 57; $df_{A \times B}$ = 3, 56.

Table 4

Stepwise Regression on Concurrent and Future Illness

Variables	Multiple *R*	R^2 Change	F^a	F^b	*df*
		Concurrent Illness			
Strain	.603	.363	33.05***	33.05***	1, 58
Life Stress	.644	.052	22.02***	5.07*	1, 57
		Future Illness			
Life Stress	.437	.191	13.69***	13.69***	1, 58
Police Stress	.506	.065	9.82***	5.01*	1, 57
Hardiness	.555	.052	8.34***	4.26*	1, 56

Note. [a] *F* value for equation.

[b] Incremental *F* value.

*$p < .05$, ***$p < .001$.